

RECENTLY PATENTED INVENTIONS.

Engineering.

DRAWBRIDGE.—William L. Sampson, Ocean Grove, N. J. A bridge of comparatively light weight, and which is strong and durable, and may be quickly opened and closed, has been devised by this inventor. The draw spans each consist of a framework traveling on wheels on tracks laid in the bed of the waterway, the spans being moved to open or closed position by a rope or chain passing over a pulley in the bed of the waterway and around a drum on shore, the latter being operated by any convenient source of power. When the draw is open the approaches to the draw span present an upward incline designed to prevent accidents by the attempted passage of teams or passengers.

Electrical.

INCANDESCENT LAMP.—Forest W. Dunlap and John R. Quain, London, England. This invention provides an improved light refracting and magnifying envelope to concentrate the light rays downward or as required, but without causing shadows in the opposite direction. With this view the bulb is inclosed by a closely wound spiral of glass rod of circular or other section, having throughout its length the property of a biconvex lens or prism, producing a concentrating and magnifying effect. When not required to apply the envelope to the entire lamp, the upper or the lower half may be employed as desired.

Bicycles, Etc.

BICYCLE PROPELLING MECHANISM.—Erling Slippert, Anaconda, Montana. Besides the usual foot-propelling mechanism, the handle bar, according to this invention, is made with each side separate and with gear or toothed connections, whereby the up and down motion of the two sides of the handle bar may be communicated through a link to a sprocket wheel mounted on the forward part of the frame, this wheel being connected by a sprocket chain with the main crank shaft. The arrangement is such that the motion of the handle bars will be opposite that of the pedals, the right handle bar rising while the right pedal is descending.

ELASTIC TIRE.—William F. Williams, London, England. This tire is made of a band of rubber or rubber and canvas in which are embedded juxtaposed transverse spiral springs, the band having lateral extensions stiffened by non-coiled prolongations of the springs, and being transversely arched when applied to the wheel rim, on which it is retained by engagement of the lateral extensions. The device is designed to combine the advantages of a pneumatic tire with the durability of a solid rubber tire.

Mechanical.

WARPING ROLLER.—John Cocker, Philadelphia, Pa. This invention provides an improved sectional drum for beam warping machines, arranged to permit of conveniently replacing a worn out or broken drum with new parts instead of procuring an entire new drum when renovating a machine. The drum shaft carries one, two or more rimmed webs, a drum rim formed with internal bosses or flanges registering with the web rims, and set screws in the web rims for adjusting and supporting the drum rim concentric to the shaft. Drum rims of different diameters may be used, and placed in position by the set screws on the webs, for the same warping machine, according to the work under treatment.

ROLLER COTTON GIN.—Frederick L. Montgomery, New York City. This invention covers an improvement on a formerly patented invention of the same inventor, providing an improved gin arranged to properly strip the seed from the lint of upland or other cotton without danger of tearing or pulling the fibers apart and without crushing or otherwise injuring the seed. A fixed stripper plate has its inner face concave and in close proximity to the peripheral face of the ginning roller, the upper end of the plate being formed into a knife edge and a movable stripper operating over the plate, while under the plate is a drawing device with rollers, one in front of the other, and held in peripheral contact with the ginning roller.

Agricultural.

CATTLE GUARD.—James Hensey, Warren, Ark. To prevent cattle or other animals from passing over railroads or other dangerous places, this invention provides a simple and inexpensive guard or gate mounted to swing transversely of the track, across which is extended a rock shaft carrying a lever, there being a link connection between the lever and gate arms extended from the shaft, and a platform bearing on the arms. The platforms may extend any desired distance at both sides of the gate or guard, and the arrangement is such that, by an animal stepping upon one of the platforms, the gates are drawn to closed position.

BEE CATCHER.—Edward Arrington, Wilkesville, Ohio. To facilitate taking and placing bees in the hive without danger of the operator being stung, this invention provides a suitable slide frame with grooves in which may be reciprocated a sliding door, controlling the entrance of a receptacle, the whole being pivotally mounted on a bracket on an extensible pole. Flexible pieces are provided to enable the operator to slide the door to open or close the receptacle while the latter is held in elevated position or near a tree limb, the vibration of the latter causing the bees to fall into the receptacle. The receptacle may be held in any desired position with respect to its support, and raised close to the swarm of bees.

Miscellaneous.

FILTERING APPARATUS.—Charles Prevot, Paris, France. This invention provides a simple and inexpensive filter, designed to be made in small pocket form for the use of soldiers, sportsmen, etc., or in larger sizes. The filter proper is composed of two shells of unsized filtering paper, between which is interposed a lens-shaped piece of perforated metal or of porous material, preferably carbon, the arrangement being such that the water will be first passed through

the paper and then through the carbon, a free space being left for the filtered water to collect in. The filtering shells and internal receptacle are joined together by flat rings and closing devices adapted to retain all parts in position.

PENHOLDER.—Wellington Blend, Yonkers, N. Y. To give increased elasticity at the holding end of the penstock and thus render an ordinary steel pen less rigid than usual, enabling one to execute fine penmanship with greater freedom and beauty of shading than can be ordinarily attained with a steel pen, this invention provides for an elastic coiled wire ferrule on the penholding end of the penholder, an elastic holder plate being also attached to the penstock and projected outward into the ferrule.

FOUNTAIN PEN.—Carl J. Renz, New York City. To provide for the control of the ink from the barrel to the pen by a slight movement of a controlling valve or stem, the valve opening and closing the barrel close to the feeder, and the feeder being formed continuous with the valve, are the main objects of this invention. The feeder is placed loosely in the barrel nozzle, allowing a more than usual free circulation of air, but allowing for a gentle vibration of the feeder, whose stem extends the length of the barrel, so that when the pen is in use a greater flow of ink is obtained in rapid writing and a lessened flow in slow writing. The construction is such that the pen may be readily and conveniently placed in position on the feeder or detached therefrom.

GAS BURNER.—George I. Woolaver, Quincy, Mass. A burner designed to utilize the expansion and contraction of metals to regulate the flow of gas has been devised by this inventor, the burner being intended to stop or nearly stop the flow of gas when the flame is put out. Standing on the casing or body portion of the burner is an expansion tube, to the upper end of which and extending through it is attached a gas-conducting tube, the latter having a bypass, while a valve held by the lower end of the gas-conducting tube is seated on the casing or body portion. The burner has the usual cock, but on the extinguishment of the gas, without turning this cock, the flow of gas is so far diminished as to prevent asphyxiation or an appreciable waste of gas.

KITE.—Claison S. Wardwell, Stamford, Conn. This is a kite of simple and inexpensive construction, arranged to be conveniently folded. It is of substantially diamond shape, with a longitudinal stick and a bow or cross stick, the bow of the cross stick being maintained by a tightly drawn cross wire connecting its ends, while the ends of the sticks are connected by bounding cords or wires which carry the cover. The two sticks are preferably held in position by blocks and a binding cord.

HITCHING POST.—Elmer J. Sellers, Kutztown, Pa. A post adapted, when not required for use, to be dropped into a chamber or recess below the level of the ground is provided by this invention. The post is hollow, and is slidable in an embedded tube, in which are guides, there being means for locking the post in both its raised and lowered positions, and the arrangement being such that, by means of springs, the partial elevation of the post is automatically accomplished by depressing or otherwise operating a trigger or catch, making it unnecessary to stoop to the ground to reach the post.

NECK YOKE COUPLING.—Lord O. Snell, Athens, Pa. A coupling which permits the easy adjustment of the yoke bar on the pole after or before attachment to the harness is provided by this invention, the coupling not being liable to become accidentally detached in case of a broken whiffletree or harness. The coupling consists of a head with shank for attachment to the pole, the head extending above the shank and having a segmental guideway in which is free to move and turn the ball-shaped head of a link pivotally connected by a clip to the yoke bar.

BROOM SAWING.—Frederick A. Buck and Joseph D. Valentine, Urbana, O. To hold a broom edgewise or parallel to a saw blade while the handle is being acted on by a band saw, jig saw or other suitable saw, to cut a curve or slit lengthwise through any portion of it, these inventors have devised a novel form of support by which the body is movable freely on the table to permit the kerf to be waved and to reduce friction.

CLOTHING BOILER.—William P. Rylander, Temple, Texas. This boiler has in its upper portion brackets on which rests a cover having a central opening, and above this cover is supported a perforated upper cover, there being in the lower portion of the boiler a false conical perforated base from which a pipe leads upward to a soap box in the lower cover, from which also a surrounding perforated pipe leads downward. The soap is thus added to the water as the boiling proceeds, and there is no danger of the water or suds boiling over the exterior of the boiler.

HOUSEHOLD FURNITURE.—Charlie E. Kuhn, Johnstown, Pa. A combination article of household furniture provided by this inventor comprises a bench adapted to be used to support tubs in washing or for other purposes, a step ladder, a child's crib and a support for an ironing board or similar article, the invention covering a novel construction and combination of parts, including end frames with pivoted locking diagonal braces, removable sides and a removable slatted bottom, etc.

LOCK.—Henry D. Smith and Josiah W. Batcheller, St. Louis, Mo. A lock especially designed for use on freight cars has been devised by these inventors, whereby the doors may be securely closed by a lock located within the car, with only its operating spindle appearing at the outside. The lock is provided with a dial or disk containing a combination, which, together with the handle or knob, may be quickly and conveniently removed from or placed in engagement with the locking spindle to bolt or unbolt the lock.

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Notes & Queries

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References to former articles or answers should give date of paper and page or number of question. **Inquiries** not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

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(7332) C. H. asks: 1. How can I coat copper with quicksilver? A. Clean the copper by dipping it into dilute sulphuric acid, and then put it into the mercury, or else pour the mercury upon it and rub it around. 2. Give me the address of some electric supply house in Chicago where I can get the material to make the battery described in SUPPLEMENT, No. 792. A. Any dealer in Chicago will supply you. See our advertising columns. 3. How many volts will one Bunsen cell 5x7 give? A. About 1.7 volts.

(7333) W. C. P. writes referring to query No. 7321: The article I have seen sold for making a transfer of a picture to a white paper resembles paraffine, colored to disguise it. I have used an ordinary paraffine candle for the purpose with entire success. The transfer cannot be made very well after the ink of the picture is dry. An old print could not be transferred. Of course, the picture is reversed in transferring. The right hand becomes the left. People with articles in their hands look left-handed in the transfer.

(7334) S. C. McKay asks: 1. Is there manufactured a mechanism by which current (either the alternating or an intermittent commuted current) from a regular telephone magneto dynamo is utilized to make and break a local battery circuit? A. We do not know any such appliance on the market, but there is no difficulty in making the current make and break another circuit in the same manner as it rings a bell by a vibrating armature of an electro magnet. 2. Please explain the seeming change or loss of polarity exhibited in the common noncentrally pivoted magneto ringer. One may find the clapper persistent in hanging over to one side, but, in a few days or weeks, equally as determined to "stick" to the other side. Lightning sometimes makes this change, but I find that it often occurs in winter when there is no lightning (visible). A. In a magneto bell a polarized magnet is generally used. The armature is apt to stick on one side or the other. The shifting may be due to some slight change of adjustment brought about by atmospheric changes. 3. I have repeatedly, by putting my ear to the transmitter of a telephone, heard talking that was going on over the line, my hook being down at the time. This happens with carbon phones using either the carbon or the metal diaphragm. Also those with the extension arm. Is this not caused by the waves of sound being imparted to the body of the phone and thence to the diaphragm by the ringer coils? A. When the receiver is hanging on its hook, the circuit of receiver and transmitter is open, and the circuit of the magneto and the bell is closed. The talking may be caused by induction from the bell coils as you suggest.

(7335) B. P. B. asks: 1. Can a common magneto generator be changed in windings, commutator, or otherwise so that it can light a small (say 1 candle power) lamp? Or is the current gotten out of one either the wrong kind to light lamps, or, if it is the right kind, too weak? I refer to common battery lamps. A. If your magneto generator gives sufficient current, it would light a lamp. No special kind of winding or commutator is required. 2. If one of the generators will light a lamp, does a special kind of lamp have to be

used? If so, please tell me what kind? A. No. 3. Will you please describe, in this issue of your paper, how an electric needle, used to kill the roots of hairs, is made and operated, and by what kind of batteries, etc.? A. This question was answered in SCIENTIFIC AMERICAN, vol. 77, No. 20, query No. 7230. A platinum needle should be used.

(7336) G. L. asks how to apply Run-korff's condenser to the medical coil described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 569, also the number of sheets of tinfoil and the area of each. I would also like to know the difference, if any, between an induction and spark coil. A. The condenser for your coil should consist of 20 sheets of tinfoil, each 4x5 inches. Allow the sheets to project on the ends 1 inch, and the effective surface of foil will be 4 inches square. Join one side of the condenser to the plus wire from the battery and the other to the negative wire. A spark coil is an induction coil with a condenser. Both the spark and the induction coils are explained in Sloane's "Electrical Toy Making," price \$1 by mail. Or we can send you for \$5 the "Electrical Library."

(7337) G. A. K. writes: I am about to construct a telephone line (metallic circuit), and wish to run electric light wires on same poles for a distance of 7 miles, bare copper. Will want to carry sufficient current for about 600 to 800 16 candle power incandescent lights. What sized wire should I use, and will it require a 3-wire line or will a 2-line wire do for alternating current? How much current will twenty 16 candle power lights consume in one hour? Will there be any appreciable loss of current transmitted through 7 miles of bare copper wire if well insulated? A. You can use single phase alternating current system, using two wires, each of No. 6 B. & S. gage, generating the current at 2,000 volts, transforming it to 5,000 volts for the line and again stepping down to 110 volts for the lamps. It would not be safe to use bare wire on account of the high potential. There will be a loss of about 10 per cent in transmission under the above conditions. The amperes of current represent the rate of flow, and depend upon the voltage as well as the efficiency of the lamp. Twenty 16 candle power lamps, at 110 volts, would consume about 10 amperes. If used for one hour, it would be equivalent to 10 ampere hours. If the lamps were 55 volts, the current would be twice as great.

(7338) G. E. C. asks: 1. Is there a more lasting battery than the plunge battery described in the SCIENTIFIC AMERICAN of August 31, 1899, for running the simple electric motor described in March 17, 1888, number, or a more efficient motor than that one for running a sewing machine? I think of making one, and want the best. A. You can try the Edison-Lalande, some types of which will give as high an efficiency as the bichromate; but you must consider that you cannot have power without consuming materials, and if a battery yields a good amount of current, it will consume its materials rapidly. 2. How would 8 cells of dry battery work, as it would be much cleaner and handier? A. You cannot use dry cells for running motors. Dry cells are for open circuits and intermittent use only. They run down very rapidly on a closed circuit. 3. And would the motor need to be so large for 1 machine as it is said to run 2 or 3? A. While a smaller motor might run 1 machine, it is not wise to have the motor so small that there is little excess of power to meet a heavier load than the average. 4. Would 18 or 20 wire answer for smaller one? A. Yes. 5. Is electricity of any value medically, if so, how should it be used for catarrh and neuralgia and rheumatism, or where can I get information on that subject? A. For the medical use of electricity, consult your physician. It is the only safe course. 6. Where can I get the gutta percha sheets, if I have to make the plunge battery; also, the carbon and zinc plates? A. These materials can be had of any dealer in electric supplies in your city or New York. Glass jars can be used for the battery in place of gutta percha, and will be less expensive.

(7339) S. W. E. asks: 1. Can a storage battery of 25 cells, each cell giving when charged 21 volts, be charged by a 2 light dynamo producing 52 volts? If so, in what manner? A. Twenty-five storage cells require $25 \times 2\frac{1}{2}$ volts = 62½ volts pressure in the charging current. You would need to divide the battery into two parts in multiple to charge it with your 52 volt dynamo. You should also arrange a wire resistance—iron wire is good enough—to take up the rest of the drop. Thus: $13 \times 2\frac{1}{2}$ = 33 volts nearly. 52 volts are about 1½ times 33, and you will require wire enough to have a resistance about ½ as great as that of your 13 cells. What that is we cannot tell you. The charging will be very slow, as your dynamo gives but 2 amperes of current; and the charging will be at that rate per hour. Thus: If the cells are 30 ampere hours, a current of 2 amperes will require 15 hours to charge them; and similarly for any other capacity. The better way is to use a heavier current, and so reduce the time of charging. 2. Can it be charged through one mile of No. 12 galvanized iron wire? A. Yes, if there is current enough; but we do not see why any one should waste current on a mile of iron wire. It would seem to be a better way to carry the battery to the electricity, rather than to carry the electricity to the battery. 3. Can 16 candle power lamps be manufactured to use as low as 15 volts? A. Yes. Correspond with the principal lamp manufacturers.

(7340) R. C. F. writes: Will you please give an answer in the next issue of your valued publication to the following problem which we clip from local paper and which has created a discussion: "We have a problem which we would like some of our readers to send us an intelligent answer to. No. 1: A is a farmer who sells a horse to B for \$90. The following day he buys the horse back from B for \$80 and sells him to C for \$100. What are A's profits in the three transactions?" A. The profit of all the transactions is the difference between the price of the first sale and what A had at the close of the operation, which amounts to \$20. A gained \$10 by the repurchase and \$10 by the second sale over the first sale, or he received \$110, the first sale being \$90. The apparent discrepancy between the repurchase and last sale is misleading at first glance, and the difference between the first sale and the last sale only should be credited to the second sale, which shows the actual amount gained in the three transactions to be \$110 - \$90 = \$20 profit. In commercial affairs, profits are not counted on purchases alone.